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Ludwig Plate describes, in the seventh volume of the Naples *Mittheilungen*, some new ectoparasitic Rotifers from the Gulf of Naples. They belong to the family Seisonidæ, and, like all the other members of the group, occur attached to Nebalia. The forms described, four in number, belong to the new genus Paraseison, which is characterized by an absence of intestine, and has the wheel either as in Seison, or reduced to tactile bristles, or, lastly, entirely absent. The other genera of the family—of which a synopsis is given—are Seison of Grube, with two species, and Saccobdella of Van Beneden and Hess, with a single species.

MOLLUSCS.—Prominent among the papers in the twenty-sixth volume of the *Journal de Conchyliologie*, just completed, may be mentioned an account of the Molluscan fauna of the valleys of the Tage and the Sado, Portugal, by Nobre; descriptions of new species of Molluscs from Annam, by Wattebled; from Cambodia and Tonkin, by Morelet; and from China, by Hende.

EMBRYOLOGY.[1]

A Theory of the Origin of Placental Types, and on certain Vestigiary Structures in the Placentæ of the Mouse, Rat, and Field-Mouse.—The discoidal placenta has been supposed by Balfour to have been derived from an earlier and less specialized diffuse type. He, however, gave no connected, and, as it seems to the present writer, no plausible view as to the causes leading to the gradual restriction of the placental area. Although I have already given partial expression elsewhere to the following views, I am now able to state them with greater clearness, owing to the fact that the placentation of the common mouse has very unexpectedly afforded some remarkable evidence in proof of the doctrine of the mechanical genesis of placental types first suggested by me.

The view which the writer holds is essentially as follows: (1) The primitive form of the placenta approximated that of the so-called diffuse type. (2) The primitive type of uterus was duplex or bipartite, and its cornua were therefore tubular. (3) Development in one of the cornua of such an uterus, as the blastosphere enlarged, must have caused the latter to touch the uterine mucosa around a zone embracing its equator, just as a sphere thrust into a flexible tube would be in annular contact with the inside of the latter. (4) If the blastosphere became elongated or fusiform within the tubular uterine cornua, as in Carnivora and Ungulata, a still greater portion of the outer surface of the blastosphere would be brought into contact with the mucous membrane of the tubular uterus, and the conditions for the development of the zonary, diffuse, or cotyledonary placenta would be established.

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[1] Edited by JOHN A. RYDER, Ph.D., Biological Department, University of Pennsylvania, Philadelphia.

Just here it may be well to call attention to the fact that the bare poles of the chorion in the diffuse type of placenta, as seen in the Mare and Dugong, show conclusively that we cannot draw a sharp line of demarcation between the diffuse and zonary types of the placenta. It follows, without any doubt whatever, from what has been said in the preceding paragraph, that the so-called diffuse type of placenta is merely a special case of the zonary, in which smaller polar areas have been left bare of villi because of more extensive contact of the chorion with the uterine mucosa. These small, bare areas of the chorion in the diffuse represent the larger, non-villous poles of the zonary type; so that, in reality, all so-called diffuse placentæ are zonary,—*i.e.*, they are a very wide type of the zonary, in which the villous belt extends over nearly the whole of the outer superficies of the chorion.

It may also be safely affirmed that the decidua acquires importance in proportion to the concentration of the placental or villous area of the chorion, because in the diffuse type the decidua is either meagrely developed or wanting.

The concentration or diminution of the placental area also depends, to a great extent, upon the degree to which the allantois is extended over the subzonal membrane; but the gradual restriction of the area covered by the allantois must have had some determining cause. The influence which would be adequate to produce such a restriction could only be a physiological one, determined by the mechanical relations of the parts involved, and it is therefore almost certain that the extension or restriction of the allantoic area would be determined by the proportions of the surface of the chorion brought into contact with the vascular walls of the uterus, or by the restriction of the vascular and deciduous area in the walls of the uterus itself. The last-mentioned type of restriction is of great importance in connection with the origin of the discoidal type of placenta, because it is probable that from the diffuse type of placenta the zonary has been derived, while from the latter it is in the highest degree probable that the discoidal has arisen in virtue of the restriction or reduction of the maternal vascular and deciduous surfaces of the uterus. The new evidence, which I will now present on this point, as observed in *Mus musculus*, *M. decumanus*, and *Hesperomys*, will, it seems to me, leave little doubt as to the essential correctness of the views set forth above, even after we make due allowance for the effect of uniparity and pluriparity, because it is very probable that pluriparity has tended to preserve the primitive bipartite or duplex type of uterus with its right and left tubular halves, in order that a number of fœtuses could be nourished in each uterine tube at one time, as in Rodentia.

In the latter, when the fœtuses are somewhat less than half grown, it is very evident that there is an annular thickening of the uterine wall (shown at *v* in A and B of Fig. 1). Dissection reveals the fact that this annular thickening is nothing else than a part of the decidua, as it is closely adherent to the fœtal membranes, and extends from either edge of the decidua of the discoidal placenta (*p*) around over the back of the embryo, as shown at B and C in Fig. 1. This thickened portion, or decidua, if isolated, together with the placenta, and unrolled upon a flat surface, would appear as shown at D in Fig. 1. The question immediately arises, What is the nature of this structure? It seems to the writer that there can be no question that its position and relations indicate that it is a vestige of the zonary type of placenta which must have been developed in the ancestors of the Rodentia.

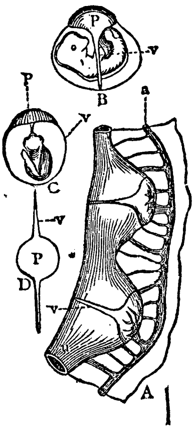

FIG. 1.

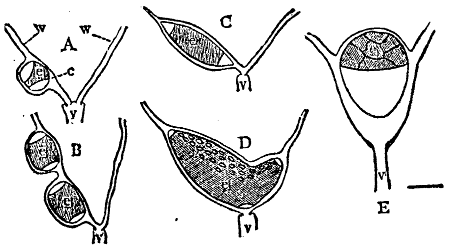

FIG. 2.

All of the placental girdle, in the light of this evidence, has been aborted in the Rodentia, except a small discoidal segment nearest to the blood vascular supply on the mesometric side of the uterus, as shown at A in Fig. 1, where *a* represents the uterine artery (the vein has not been indicated in this diagram). The functionless part of the decidual girdle in existing murine types shows that the ancestral Rodentia possessed a zonary placenta. We may confidently affirm this, in spite of the anomalous mode of development of the Cavys and Murine types, because there is good reason to suppose that the types of development presented by both the latter have been derived by descent with modification from a type approximating the more primitive one, which was similar to the less specialized mode of development of the Rabbits and Hares.

We may suppose, further, that the zonary girdle first began to narrow and abort on the side of the uterine tube opposite to and most remote from its mesometric aspect, and, consequently, farthest away from the blood vascular supply of the organ. This is shown diagrammatically in Fig. 2, at A, where *w* represents the wall of the left and *w'* that of the right uterine tube, *c* the chorion, *e* the placental girdle and the form of the area covered by the decidua, and *v* the vagina. We may suppose Fig. 2, A, to represent a type intermediate between that shown in Fig. 1 and that represented in Fig. 2, at B, which is that characteristic of certain Carnivora,—the Cat, for example. In C, Fig. 2, the hollow chorion has become more elongated,—in fact, fusiform; its bare poles are conical instead of flat, as in B, while the villous portion, *e*, is a broad zone. This type is found in the Dog and in *Phoca*, in which, at certain stages, it is very strongly marked. In all these types placentation occurs exclusively in either the right or left half of the uterus, but in the still more specialized uniparous types, to be next described, we find that portions of both right and left halves of the uterus present more or less mucous surface to the single chorion which they enclose. In spite of this, however, we may still discover traces of the zonary condition in D, Fig. 2, which represents the relations of the chorion to the right and left horns of the uterus in the Mare and Dugong, while, if the villi are aggregated into little tufts mainly on the mesometric side, as shown by the small, oval areas, we would have the condition found in the Cow. In this last type we find three bare areas on the chorion,—viz., at either pole, and another overlying and exactly opposite the *os uteri*, as shown in D, Fig. 2.[1] In the so-called diffuse type, represented by D, it is clearly seen that the villous zone is a very wide one, and it is also clear that the type D must have been derived from one similar to that shown at C, Fig. 2. In fact, if the chorion and embryo in the left horn of C were slipped down so as to lie partly in the right horn, we would get a condition practically like D. With the still greater specialization of the uterus, as a result of which its cavity is no longer tubular, but pyriform, in the gravid state, as shown at E, Fig. 2, other modifications of the placenta supervene. The globular chorion found in the type E (uterus simplex of Man, Apes, and several Edentates) still tends to develop the placenta at the cardiac or mesometric side. In the case of *Tamandua*, *Cycloturus*, and *Bradypus* there is a more or less well-marked lobulation of the discoidal placenta, which is probably a reminiscence of cotyledons which have suffered approximation, as the type of uterus D passed into that shown at E. In the Primates the simple discoidal placenta of the highest types and the two unequal placental disks of the Old World monkeys are further modifications of a type which must have been primitively zonary or diffuse, as is proved by the placentation of the Lemuridæ, which is similar to that of D, Fig. 2. Such a view is further countenanced by the fact that in its earliest condition the placenta of the Primates is essentially diffuse in its character.

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[1] These bare areas seem to have arisen in consequence of the failure of the surface of the chorion to come into intimate contact with a vascular maternal surface at these points.

The facts as interpreted above seem, to me, to leave no doubt regarding the great influence which variation in the mechanical relations of the chorion to the uterine walls has exercised in the evolution of placental types. This, coupled with the influence exerted by the varying fertility of species, the variation in the vascularity of different parts of the uterine walls, and the form of the uterine cavity, has, doubtless, been the all-important factor in the evolution of the various existing types of gestation.—*John A. Ryder*, June 24, 1887.

ANTHROPOLOGY.

Arrow-Release among the Navajos.—Yesterday (28th March, 1887) I was out with my camera upon one of the hills which closely surround the frontier military post of Fort Wingate, New Mexico. On the site referred to are built three Navajo lodges, or "hogans," as they are called,—two of the old original structures of the tribe and one of the more recent dwellings, or plan of building. Having made my intentions known, that I desired a picture of a warrior in the act of shooting his war-bow, there soon gathered about me some eight or ten venerable-looking old Navajo bucks, two or three of whom had their war-bows and arrows with them.

Having just read with great interest Professor Morse's pamphlet on arrow-release, a copy of which he had kindly sent me, it was with no little curiosity that I handed a bow and two or three arrows to an old gray-headed warrior present, and asked him, "Draw,—as if you were about to kill the worst enemy you had in the whole world." A particularly savage expression came over the old fellow's countenance at the suddenness of my request, but he seized the bow and arrows, and immediately drew one of them to its very head. This is the position he stood in at the time: his left foot was slightly in advance of the right, the bow was firmly seized at its middle with the left hand, while it was held somewhat obliquely, the upper moiety inclining towards the right from the vertical line, and, of course, the lower limb having a corresponding inclination towards the left side. The two spare arrows were held with the bow in the left hand, being confined by the fingers against its right outer aspect. With the right hand he seized the proximal end of the arrow in the string, using the thumb and index finger, at a point fully an inch or more above the notch, and consequently including the feathers. The "ring finger" bore against the string below this seizure, and its pressure was reinforced by its being overlapped by the middle digit, the little finger being curled within the palm of the hand.

This corresponded to Professor Morse's "secondary release" as figured on page 8 of the above referred to pamphlet, with the exception that the middle finger should overlap the annularis,